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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,458	02/19/2002	Yoshio Tsuji	0052/064001	9878

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SMITH PATENT OFFICE  
1901 PENNSYLVANIA AVENUE N W  
SUITE 200  
WASHINGTON, DC 20006

EXAMINER

TERESINSKI, JOHN

ART UNIT	PAPER NUMBER
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2858

DATE MAILED: 08/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/076,458	TSUJI ET AL.	
	Examiner	Art Unit	
	John Teresinski	2858	17

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- ✓ 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## Examiner:

The items checked below have been noted in processing this application as filed.

After the typist has included these statements in the first Office action, please initial this form in the margin to the left of appropriate paragraph. Please do NOT remove from the file jacket.

## 1. SPECIFICATION, JUMBO APPLICATION NOT CHECKED FOR MINOR ERRORS (If more than 20 pages of description, exc of claims.)

- ☐ Because of the lengthy specification in this application, it has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is therefore requested in promptly correcting a errors of which he may become aware in the specification or drawings.

## 2. RESIDENCE OMITTED (MPEP 605.02 and 603.03)

- ☐ Applicant's residence has been omitted from the papers. The city and state of his post-office address will be pre- to be the city and state of his residence. If the above is incorrect, applicant should submit a statement of his pla- residence no later than at the time of payment of the issue fee.

## 3. PRIORITY PAPERS, ACKNOWLEDGMENT (MPEP 201.14(c))

- ☐ Receipt is acknowledged of papers submitted under 35 U.S.C. 119, which papers have been placed of record in the

## 4. PRIORITY PAPERS, ACKNOWLEDGMENT, PAPERS IN PARENT APPLICATION (MPEP 201.14(b))

- ☐ Applicant's claim for priority, based on papers filed in parent application Serial No. \_\_\_\_\_ subm under 35 U.S.C. 119, is acknowledged.

## 5. PRIORITY, CLAIM FOR BUT NO PAPERS FILED (MPEP 201.14(c))

- ☒ Acknowledgment is made of applicant's claim for priority based on an application filed in JAPAN on 2-19-01. It is noted, however, that applicant has not filed a certified copy of said application as required by 35 U.S.C. 119.

## 6. PRIORITY PAPERS, MORE THAN ONE YEAR SINCE FILING IN FOREIGN COUNTRY (MPEP 201.14(c))

- ☐ Receipt is acknowledged of the filing on \_\_\_\_\_, of a certified copy of the \_\_\_\_\_ application referred to in the \_\_\_\_\_. A claim for priority can not be based on said : tion, since the United States application was filed more than twelve months thereafter.

## 7. PRIORITY, REFERENCE IN OATH OR DECLARATION OMITTED (MPEP 201.14(o))

- ☐ Receipt is acknowledged of papers filed \_\_\_\_\_, of a certified copy of the \_\_\_\_\_ application referred to in the \_\_\_\_\_. A claim for priority can not be based on said : tion, since the United States application was filed more than twelve months thereafter.

DATE

RABER

4/8/02

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 10-15, 17-19, 21, 23-34 and 38-44 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,369,591 to Cugini et al..

Regarding claims 1, 14, 30, 32-34, 41, 43 and 44, Cugini et al. disclose a circuit board testing apparatus and methods of operation including:

an electromagnetic wave irradiator which irradiates an electromagnetic wave onto a first terminal/pad of a selected one of the wirings/traces to discharge electrons from the irradiated terminal by photoelectric effect (column 1 lines 62-67, column 2 lines 1-7);

an electrode disposed at such a position as to trap the discharged electrons (column 4 lines 56-61) ;

a voltage supplier which produces a difference of electric potential between the electrode portion and the other terminal of the selected wiring so that the electrode portion has an electrical potential higher than the other terminal of the selected wiring (column 1 lines 62-67);

a current detector which detects a current caused by electrons trapped by the electrode and flows through the selected wiring via the electrode (column 6 lines 5-24); and

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a judger which determines existence of open-circuit and/or short-circuit based on the current detected by the current detector (column 6 lines 5-39).

Regarding claim 2, Cugini et al. disclose a deflector which changes the direction of the electromagnetic wave in such a manner to selectively and successfully irradiate the first terminals of the plurality of wirings (column 3 lines 53-65).

Regarding claim 3, Cugini et al. disclose a power source, and a connector which connects the power source, the electrode, the second terminal of the selected wiring, and the current detector with one another to constitute a closed circuit thereby (column 4 lines 50-55, Fig. 1 elements 55U, 55L, 56U, 56L).

Regarding claim 4, Cugini et al. disclose a switch/switching circuitry to connect probes to the power source (column 5 lines 25-35).

Regarding claim 5, 31 and 42, Cugini et al. disclose a housing/chamber which encloses the first terminals of the plurality of wirings to constitute an airtight closed space, and a depressurizer which depressurizes the closed space (column 2 lines 55-65).

Regarding claim 6, Cugini et al. disclose a transparent upper housing (column 2 lines 55-65).

Regarding claims 7 and 8, Cugini et al. disclose a transparent electrode formed on the upper part of the housing and a meshed electrode formed on the upper part of the housing (column 4 lines 32-40).

Regarding claims 10-13 and 29, Cugini et al. disclose a voltage supplier with two poles (column 5 lines 54-67, column 6 lines 50-62), wirings/traces serving as electrodes, connecting

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the second terminal to the power source and irradiating adjacent selected wirings (column 6 lines 1-5).

Regarding claims 15, 17, 18 and 23, Cugini et al. disclose irradiating terminals/portions one at a time and applying voltage to seconds terminals, one at a time (column 5 lines 54-67, column 6 lines 1-5, 40-42).

Regarding claims 19 and 27, see claim 5 above.

Regarding claims 21 and 24-26, see claims 10-13 above.

Regarding claim 28, see claim 7 above.

Regarding claims 38-40, Cugini et al. disclose detecting a first and second current and judging based on the first and second currents (column 6 lines 5-25).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cugini et al. in view of U.S. Patent No. 5,999,005 to Fujii et al..

Regarding claim 9, Cugini et al. does not disclose a housing/chamber with a conductive sidewall. Fujii et al. disclose a voltage measuring apparatus including an irradiated surface, circuit board testing and a housing with a conductive sidewall (column 16 lines 1-11). It would have been obvious to one of ordinary skill in the art at the time the invention was made to

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include a housing with a conductive sidewall as taught by Fujii et al. into Cugini et al. for the purpose of providing a conductive path from a test point to the current detectors.

Regarding claims 20 and 22, Cugini et al. does not disclose a ground layer. Fujii et al. disclose a ground layer capacitively coupled to part of the selected wiring (column 2 lines 49-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a ground layer capacitively coupled to part of the selected wiring as taught by Fujii et al. into Cugini et al. for the purpose of detecting potential at a measuring point (column 2 lines 49-65).

Claims 16, 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cugini et al. in view of U.S. Patent No. 5,781,017 to Cole, Jr. et al..

Regarding claims 16, 35 and 36, Cugini et al. does not disclose an electrode capacitively coupled to conductors of the wirings/traces. Cole, Jr. et al. disclose an electron beam apparatus for testing circuit boards including capacitively coupled electrodes (column 2 lines 5-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include an electrode capacitively coupled to conductors of the wirings/traces as taught by Cole, Jr. et al. into Cugini et al. for the added advantage of testing one or more electrical conductors within a circuit that are located beneath one or more insulating layers (column 1 lines 41-46).

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cugini et al. and Cole, Jr. et al. as applied to claims 35 above, and further in view of Fujii et al..

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Regarding claim 37, Cugini et al. as modified does not disclose a ground layer. Fujii et al. disclose a ground layer capacitively coupled to part of the selected wiring (column 2 lines 49-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a ground layer capacitively coupled to part of the selected wiring as taught by Fujii et al. into Cugini et al. as modified for the purpose of detecting potential at a measuring point (column 2 lines 49-65).

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Teresinski whose telephone number is (703) 305-4746. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (703) 308-0750. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JT

JT

August 13, 2003



N. Le

Supervisory Patent Examiner  
Technology Center 2800